

Innovation: The Key To Building Climate-Resilient Regions

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Target recipients: public authorities - Local and regional administration; Territorial/spatial planning experts; Research and technology organisations working in climate resilience and sustainable development

How can innovation boost climate resilience at a regional/local level?

A sustainable development approach at a regional level must tackle social inequalities while integrating environmental, economic, and social dimensions. This approach ensures that all communities benefit equitably from sustainability efforts while promoting a healthier planet and a stronger economy. It embodies the principle of a just transition, ensuring that no one is left behind in the European/global transformation towards a sustainable future.

Innovation has a pivotal role in driving progress to sustainable development by generating, developing, and implementing new ideas, products or methods where they have not been used, identifying opportunities to address current challenges, including climate change, linking new and existing knowledge, with an in-depth understanding of communities and their contexts and needs.

Innovation requires organisational, political, behavioural, social and economic efforts within the “regional ecosystem” (groups of entities/organisations that operate in multiple dimensions such as economic, political, cultural, etc. - eg. companies, local and regional authorities, schools, universities, NGO, cultural associations, research and innovation organisations, other social institutions) for a meaningful transformation supported by the empowerment of communities to effectively adapt and flourish amid the challenges of changing climate conditions. Embracing this interactive and cross-sectoral approach enables regions to foster innovative solutions as part of a comprehensive local/regional strategy to tackle climate change and effectively enhance climate resilience.

By leveraging innovative ideas, creative problem-solving, and sustainable practices, regions can uncover new strategies to protect against environmental challenges, optimise their resources, and ultimately ensure a sustainable and prosperous future for generations to come.

Which enablers shape the success of innovation?

The primary challenge of a transformative innovation process lies in gaining a comprehensive understanding of how to enhance the innovation process and overcome the barriers that hinder it.

For an **innovation process to be successful, it is crucial to be understood by communities and their multiple actors and to be supported and integrated as a strategic agenda at the regional level.** This requires strong leadership and active stakeholder engagement throughout the process, and, as an iterative process, a culture of monitoring and learning, for ongoing improvement.



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By understanding the enablers and obstacles to innovation, the regional actors (the regional ecosystem, those who influence the context as illustrated in Figure 1) can adopt best practices that foster an environment conducive to the successful implementation of transformative innovation processes.

[Bajada et al. \(2022\)](#) organised the enablers of innovation into four key building blocks:

1. drivers (e.g. institutional anchors),
2. cultivators (e.g. access to funding and knowledge creation),
3. infrastructure (e.g. digital infrastructure), and
4. networking (e.g. active networking).

Each building block includes several measurable attributes that are strongly influenced by context-specific factors and by the phase of development of innovation activities, emphasising the relevance of context understanding for the definition of enabling conditions for successful and long-term innovation.

How will R4C support the regions in their transformation towards climate resilience?

The Regions4Climate (R4C) Horizon Europe project is designed to implement innovative and tailor-made climate-resilient solutions, aligned with the [EU mission on Adaptation to Climate Change](#).

The overarching goal is to support 12 European regions (organised into three clusters) to adapt to climate change impact, providing meaningful knowledge that has been shared through cross-border and cross-sectoral cooperation among the consortium partners.

To assist regions in this transformative process, a Common Innovation Framework (CIF) was developed (under WP6/T6.1), based on relevant literature and participatory methods involving R4C partners, offering a consistent, replicable, and exploitable model for developing a regional innovation ecosystem capable of boosting long-term innovation processes that support systemic transformation (Figure 1).

This framework provides essential guidance on the innovation process. It highlights its interrelation with local and regional context, represented by the quintuple helix dimensions: political, economic, education/academia, culture/people, and territory/natural environment ([Caravannis, 2012](#)).

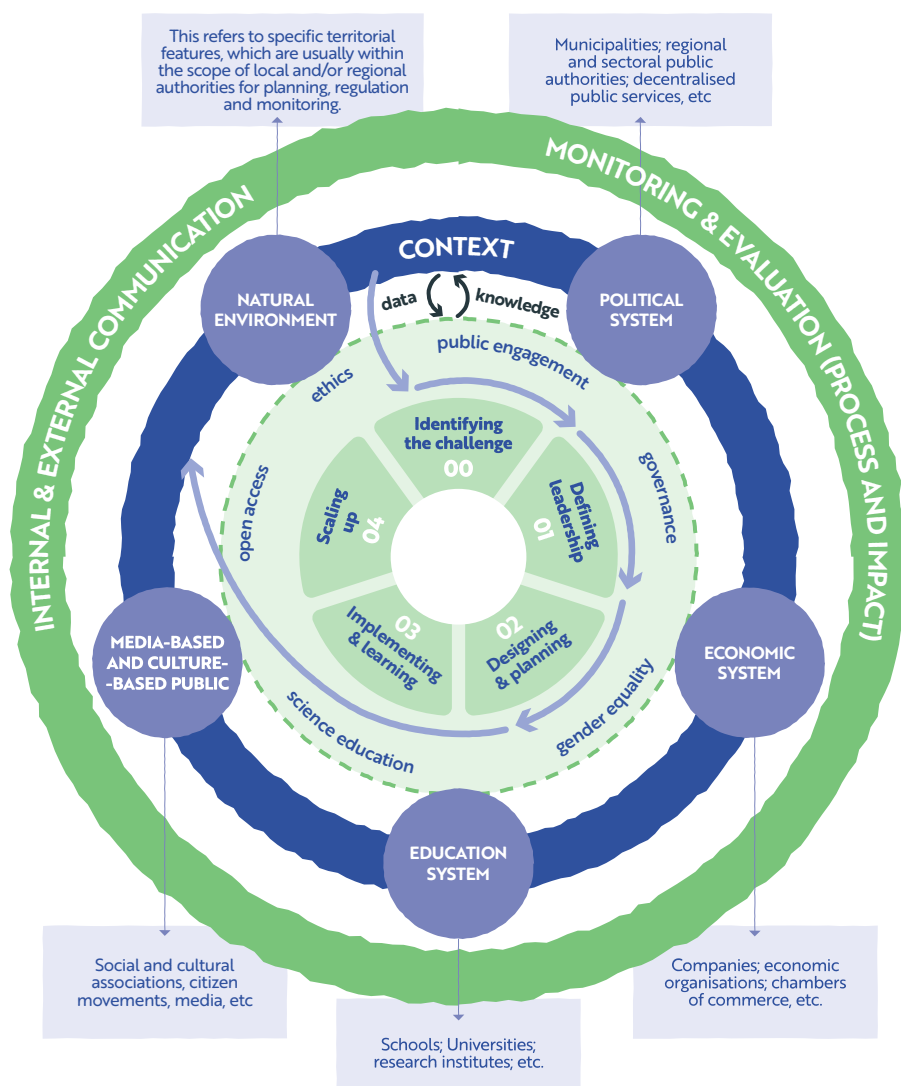


Figure 1. Common Innovation Framework
Source: R4C, D6.1 CIF & solutions portfolio, 2023



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CIF also provides relevant guidance on the 5 innovation process stages/phases (see Figure 2) that need to be considered by regional actors/organisations (in particular, the regional authorities in the R4C project): (i) identify the challenge, (ii) define leadership, (iii) design and plan solutions to address the challenge, (iv) implement under a continuous management and learning process, and (v) scaling up by turning the best ideas into a value-add.

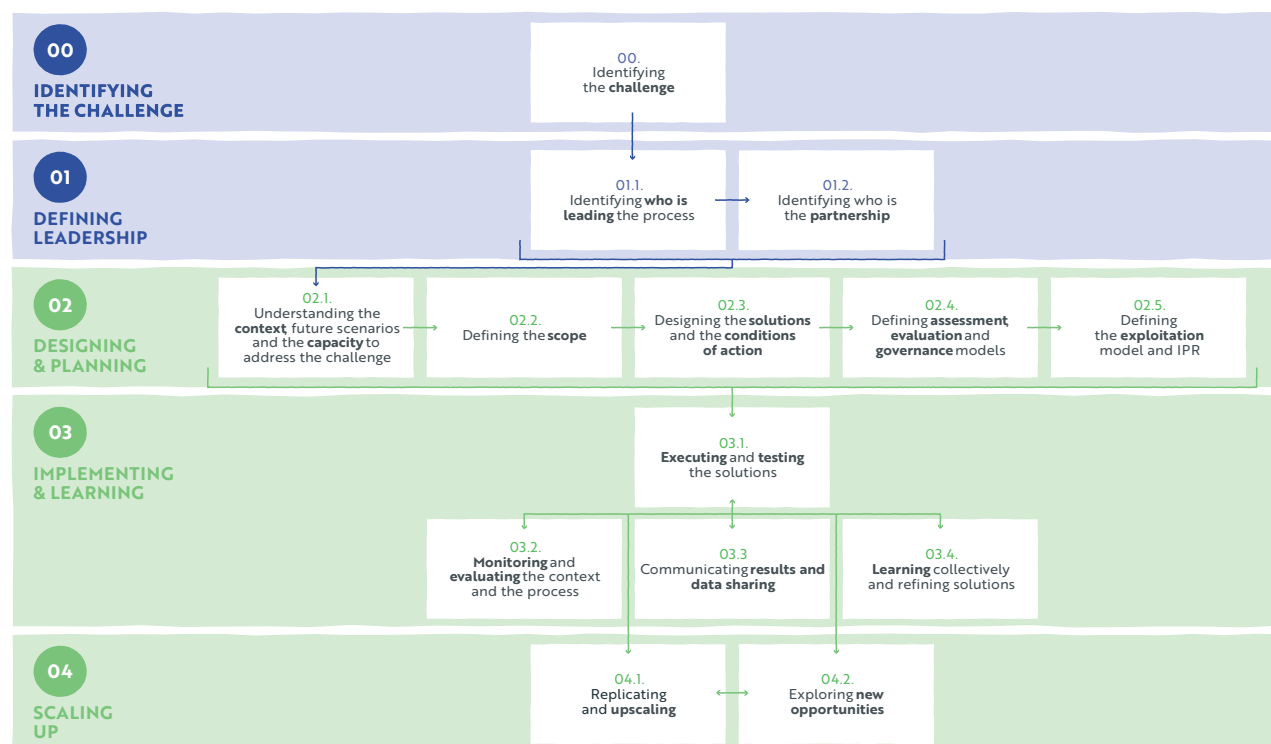


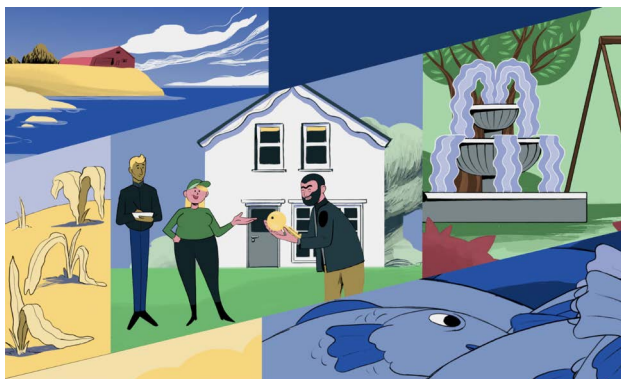
Figure 2. CIF phases and steps within the innovation process, addressing climate change issues

Source: R4C, D6.1 CIF & solutions portfolio, 2023

The knowledge generated during this process helps create a “new normal”, shaped by results such as new regulations, products, and services emerging from the innovation process. Consequently, this processed knowledge serves as an input for revisiting the initial step, initiating a cycle of innovation each time a new challenge is identified.

This framework illustrates an integrated and multidimensional approach, under the following rationale:

- policy-making action at the territorial/regional level based on a structural combination of innovation and sustainability, **adaptable to each region’s specific features, through a bottom-up approach but also top-level support** (permission, incentives, resources and leadership) to implement significant systemic changes;
- coherence of the **multiscale and multilevel approach in integrating informed and sustainable development pathways**, as there is a continuous flow between the innovation process and the context, delivering data and knowledge between them;
- inclusive approach due to a **strong partnership supported by key stakeholders and community engagement** throughout the process;
- a **commitment shared among stakeholders, through Responsible Research and Innovation (RRI)** that emphasises the relationship amongst societal domains and the dynamics driving social actors as interconnected and not merely intersected;
- **effectiveness of the governance system** on which the CIF is based, as a powerful means of knowledge acquisition and sharing, through open data platforms to manage, assess and deliver information (open data);
- **results-based approach** supported by an integrated assessment model that monitors and evaluates both the process performance and its impact on the context, contributing directly to Sustainable Development Goals (SDG).



How may the Common Innovation Framework (CIF) be useful for the regions?

The CIF's main goal is to provide the structure to create transparency, consistent milestones, and a clear path forward while leaving flexibility for emergent ideas or data that may influence the overall direction.

To put this framework into practice, a set of enabling context conditions must be considered for successful and long-term innovation (Bajada et al, 2022) and ultimately a transformative action.

CIF delivers insights to strengthen innovation territorial capacity, highlights enablers that enhance climate resilience and is adaptable to evolving global trends as well as policy and societal shifts and also offers:

- **Guidelines on how to boost innovation for effective climate resilience through a structured process**, supported by knowledge exchange, strong public engagement, monitoring and communication - Responsible Research and Innovation (RRI) principles are key to fostering ethical acceptability, inclusion and sustainability.
- **Orientation on how to make the best use of the regional innovation ecosystem and how to engage stakeholders;**
- **Insights into the further development of Innovation Packages** by showcasing the structure and interrelations between the R4C Work Packages (and their tasks) to foster innovation throughout the project implementation.

This approach is supported by recent and reliable literature that acknowledges the specificities of each region as part of its innovation potential (bottom-up approach) and seeks to harness circular knowledge and collaboration across different sectors of society to foster innovation and sustainability (quintuple helix), while actively engaging stakeholders and communities throughout the process (open innovation).

To achieve this, it is crucial to ensure a regional ecosystem that enables deep and systemic change (transformative innovation approach), complemented by the continuous testing and experimentation of innovative solutions to tackle complex challenges such as climate change (experimental governance approach). In this context, the quintuple helix provides a comprehensive and inclusive perspective, combining knowledge, expertise, communities and natural environment (territorial specificities) within an interdisciplinary and transdisciplinary framework.

Public engagement plays a pivotal role in this process, enhancing awareness, commitment, and ultimately leading to more resilient communities. Co-creation with stakeholders and citizens lies at the heart of CIF; however, cultural resistance remains a significant barrier that requires tailored strategies and methods to overcome.

To address these technical challenges, the CIF toolbox* has been developed to facilitate the practical application of these concepts. It provides several methods for translating theory into practice through a horizontal approach, in which the communities and regional authorities work side by side.

Finally, as for any innovation process, CIF relies on continuous monitoring, communication, and adaptability to changing contexts, namely in climate matters, in order to assess and measure performance and impact, including the contribution to the SDG.

* For more information, please check Annex 2. CIF ToolBox of [D6.1 Common Innovation Framework and Solutions Portfolio](#).



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What's next?

Aware of the importance of adapting to local and regional specificities and challenges, 12 Regional Innovation Roadmaps have been co-developed in close collaboration with the R4C regions. The Regional Innovation Roadmaps (RIR) are specifically designed for each of the 12 regions, customising the CIF to address their unique needs and characteristics. By taking into account local economic conditions, cultural factors, and existing capabilities, the RIR ensure that initiatives are scalable and adaptable, fostering sustainable growth and innovation. This targeted approach enhances the effectiveness of the CIF, driving meaningful change tailored to each region's context and long-term impact.

These roadmaps serve as comprehensive guides, effectively translating the overarching framework into accessible and actionable paths for fostering innovation, to facilitate a robust, realistic and trackable process of innovation, with the ultimate goal of driving sustainable development and progress towards climate resilience.

Find out more about our journey by checking <https://regions4climate.eu/> and social media.

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